

04-01-04



MEMC 02-0201 (3035.1)
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Milind Kulkarni
Serial No.: 10/705,813
Filed: November 10, 2003
Confirmation No.: 5409
For: CRYSTAL PULLER AND METHOD FOR
GROWING A MONOCRYSTALLINE INGOT

Art Unit: 1765

March 31, 2004

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VIRGINIA 22313-1450

SIR:

INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R. 1.97 and 1.98 and MPEP 609, and in compliance with the duty of disclosure set forth in 37 C.F.R. 1.56, applicant submits the attached PTO/SB/08A for consideration by the Patent and Trademark Office in the above-entitled application and to be made of record therein. In accordance with the Pre-OG notice of July 11, 2003 partially waiving the requirements of 37 C.F.R. 1.98(a)(2)(i), copies of the U.S. patent documents are not supplied. Applicant submits herewith copies of the foreign patent documents and literature references.

Respectfully submitted,

Michael G. Munsell, Reg. No. 43,820
SENNIGER, POWERS, LEAVITT & ROEDEL
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400

MGM/clh

Express Mail Label No. EL 998650501 US

PTO/SB/08A				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	10/705,813
				Filing Date	November 10, 2003
				Confirmation Number	5409
				First Named Inventor	Milind Kulkarni
				Group Art Unit	1765
				Examiner Name	Not Yet Assigned
Sheet	1	of	4	Attorney Docket No.	MEMC 02-0201 (3035.1)

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code ² (if known)		
	1	4,597,949		Jasinski et al.	07-01-1986
	2	5,248,378		Oda et al.	09-28-1993
	3	5,567,399		Von Ammon et al.	10-22-1996
	4	5,575,847		Kuramichi et al.	11-19-1996
	5	5,667,584		Takano et al.	09-16-1997
	6	5,824,149		Li	10-20-1998
	7	5,824,152		Kubota et al.	10-20-1998
	8	5,853,480		Kubota et al.	12-29-1998
	9	5,919,302		Falster et al.	07-06-1999
	10	5,922,127		Luter et al.	07-13-1999
	11	5,935,326		Kotooka et al.	08-10-1999
	12	5,942,032		Kim et al.	08-24-1999
	13	5,954,873		Hourai et al.	09-21-1999
	14	5,961,715		Ikeda	10-05-1999
	15	5,968,262		Saishouji et al.	10-19-1999
	16	5,968,264		Iida et al.	10-19-1999
Examiner Signature				Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached or place an "A" here if English language abstract is attached..

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/08A INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Application Number	10/705,813
				Filing Date	November 10, 2003
				Confirmation Number	5409
				First Named Inventor	Milind Kulkarni
				Group Art Unit	1765
				Examiner Name	Not Yet Assigned
Sheet	2	of	4	Attorney Docket No.	MEMC 02-0201 (3035.1)

	17	6,007,625		Tomioka et al.	12-28-1999
	18	6,045,610		Park et al.	04-04-2000
	19	6,053,974		Luter et al.	04-25-2000
	20	6,099,641		Ikeda	08-08-2000
	21	6,113,687		Horai et al.	09-05-2000
	22	6,132,507		von Ammon et al.	10-17-2000
	23	6,146,459		Park	11-14-2000
	24	6,153,008		von Ammon et al.	11-28-2000
	25	6,191,010	B1	Falster	02-20-2001
	26	6,228,164	B1	von Ammon et al.	05-08-2001
	27	6,238,477	B1	von Ammon et al.	05-29-2001
	28	6,245,430	B1	Hurai et al.	06-12-2001
	29	6,254,672	B1	Falster et al.	07-03-2001
	30	6,285,011	B1	Cherko	09-04-2001
	31	2003/0041796	A1	Nakamura et al.	03-06-2003

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T ⁶
		Office	Number ⁴	Kind Code ² (if known)			
	32	EP	0 890 662	A1	Shin-Etsu Handotai Company Ltd.	01-13-1999	

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached or place an "A" here if English language abstract is attached..

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/08A INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Application Number	10/705,813
				Filing Date	November 10, 2003
				Confirmation Number	5409
				First Named Inventor	Milind Kulkarni
				Group Art Unit	1765
				Examiner Name	Not Yet Assigned
Sheet	3	of	4	Attorney Docket No.	MEMC 02-0201 (3035.1)

	33	EP	0 903 427	A1	Shin-Etsu Handotai Co., Ltd.	03-24-1999	
	34	JP	96268794	A	Sumitomo Sitix Corporation	10-15-1996	✓

OTHER ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	35	ABE, T., et al., "Etch Pits Observed in Dislocation-Free Silicon Crystals", <i>Japan J. Appl. Phys.</i> , 1966, Pages 458-459, Volume 5	
	36	DASH, W.C., "Growth of Silicon Crystals Free from Dislocations", <i>Journal of Applied Physics</i> , April 1959, Pages 459-474, Volume 30, Number 4, American Institute of Physics	
	37	DASH, W.C., "Silicon Crystals Free of Dislocations", <i>Journal of Applied Physics</i> , 1958, Pages 736-737, Volume 29	
	38	DE KOCK, A.J.R., "The Elimination of Vacancy-Cluster Formation in Dislocation-Free Silicon Crystals", <i>Journal of the Electrochemical Society</i> , November 1971, Pages 1851-1855, Volume 118, Number 11, The Electrochemical Society, New Hampshire	
	39	FÖLL, H., et al., "The Formation of Swirl Defects in Silicon by Agglomeration of Self-Interstitials", <i>Journal of Crystal Growth</i> , 1977, Pages 90-108, Volume 40, North-Holland Publishing Company	
	40	KULKARNI, M.S., et al., "Dynamics of Point Defects and Formation of Microdefects in Czochralski Crystal Growth: Modeling, Simulation and Experiments", <i>High Purity Silicon VII</i> , Pages 2002-2020, The Electrochemical Society Proceedings Series, Presented at the Pure Silicon Symposium October 2002, Pennington, New Jersey	
	41	MURARKA, S.P., et al., "Behavior of Copper Impurity Atoms in Semiconductors", <i>Copper-Fundamental Mechanisms for Microelectronic Applications</i> , 2000, Pages 25-26, John Wiley & Sons, Inc., New York	
	42	PETROFF, P.M., et al., "Characterization of Swirl Defects in Floating-Zone Silicon Crystals", <i>Journal of Crystal Growth</i> , 1975, Pages 117-124, Volume 30, North-Holland Publishing Company	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached or place an "A" here if English language abstract is attached..

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/08A INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Application Number	10/705,813
				Filing Date	November 10, 2003
				Confirmation Number	5409
				First Named Inventor	Milind Kulkarni
				Group Art Unit	1765
				Examiner Name	Not Yet Assigned
Sheet	4	of	4	Attorney Docket No.	MEMC 02-0201 (3035.1)

	43	ROKSNOER, P.J., et al., "Microdefects in a Non-Striated Distribution in Floating-Zone Silicon Crystals", <i>Journal of Crystal Growth</i> , 1981, Pages 563-573, Volume 53, North-Holland Publishing Company	
	44	SHIMURA, F., "3.4.1 Point Defects", <i>Semiconductor Silicon Crystal Technology</i> , 1989, Pages 55-60, Academic Press, Inc., California	
	45	SINNO, T., et al., "Point Defect Dynamics and the Oxidation-Induced Stacking-Fault Ring in Czochralski-Grown Silicon Crystals", <i>Journal of The Electrochemical Society</i> , January 1998, Pages 302-318, Volume 145, Number 1, The Electrochemical Society, Inc.	
	46	SRIVASTAVA, R.K., et al., "Interface Shape in Czochralski Grown Crystals: Effect of Conduction and Radiation", <i>Journal of Crystal Growth</i> , 1985, Pages 487-504, Volume 73, North-Holland Publishing Company, Amsterdam	
	47	VIRZI, A., "Computer Modelling of Heat Transfer in Czochralski Silicon Crystal Growth", <i>Journal of Crystal Growth</i> , July 1991, Pages 699-722, Volume 112, Number 4, North-Holland Publishing Company	
	48	VORONKOV, V.V., et al., "Point Defects in Silicon Crystal Growth", <i>ECS Proc.</i> , 2001, Pages 3-18, Volume 2001-29, presented at the DECON Symposium 2001	
	49	VORONKOV, V.V., "The Mechanism of Swirl Defects Formation in Silicon", <i>Journal of Crystal Growth</i> , 1982, Pages 625-643, Volume 59, North-Holland Publishing Company	
	50	VORONKOV, V.V., et al., "Vacancy-Type Microdefect Formation in Czochralski Silicon", <i>Journal of Crystal Growth</i> , November 1998, Pages 76-88, Volume 194, Number 1, North-Holland Publishing Company	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached or place an "A" here if English language abstract is attached..

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.